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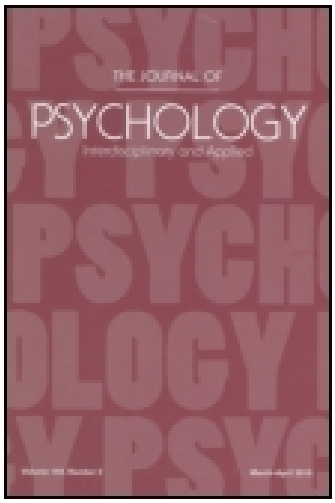

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Cognition and Belief in Paranormal Phenomena: Gestalt/Feature-Intensive Processing Theory and Tendencies Toward ADHD, Depression, and Dissociation

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Cognition and Belief in Paranormal Phenomena: Gestalt/Feature-Intensive Processing Theory and Tendencies Toward ADHD, Depression, and Dissociation

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ABSTRACT. Belief in paranormal phenomena and *cryptids*—unknown animals such as Bigfoot—may predispose individuals to interpret real-world objects and events in the same way that eyewitness identification can be biased by unrelated information (P. James & N. Thorpe, 1999). Psychological tendencies toward attention deficit hyperactivity disorder (ADHD), dissociation, and depression, even at subclinical levels, may be associated systematically with particular paranormal or cryptozoological beliefs. The authors evaluated these psychological tendencies using the Conners Adult ADHD Rating Scales (C. K. Conners, D. Erhardt, & E. Sparrow, 1999), the Dissociative Experiences Scale (L. Coleman & J. Clark, 1999), and the Beck Depression Inventory-II (A. T. Beck, 1996). They performed regression analyses against beliefs in ghosts, unidentified flying objects (UFOs), extrasensory perception (ESP), astrology, and cryptids. ADHD, dissociation, and depression were associated with enhanced tendencies toward paranormal and cryptozoological beliefs, although participants who believed in each of the phenomena differed from one another in predictable and psychologically distinguishable ways. Cognitively biasing influences of preexisting psychological tendencies may predispose individuals to specific perceptual and cognitive errors during confrontation of real-world phenomena.

Key words: cognitive reconfiguration, gestalt/feature-intensive processing, paranormal beliefs

HUMAN MYTHOLOGY MAY BE AS OLD as humanity itself (Campbell, 1959). Myths are frequently derived from the intersection of human imagination, lack of complete or accurate information, and the realities of the physical world. This phenomenon is seen, for example, in European myths of unicorns, which

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were partially derived from the presence of far-traded narwhal horns in Europe (Bruemmer, 1993) and from garbled and inaccurate medieval accounts, such as Marco Polo's description of the rhinoceros (Polo, 1948). Something that exists (e.g., a narwhal or a rhinoceros) is inaccurately or incompletely described, possibly several times by different authors who emphasize different aspects of the original description, and is embellished in art and narration, accidentally or intentionally for effect. The end result may be widespread belief in fantastic or nonexistent situations or creatures, such as the unicorn.

In the modern world and outside of mainstream religion, it has become more difficult to maintain such beliefs. For instance, satellite photographs and geology have not found Atlantis, and seismic studies have eliminated the idea that one can enter a lost world at the center of the Earth (Philbrick, 2003). As more people travel the globe with better technology, there are fewer prospects for the fabulous. Cameras provide relatively complete and accurate information, leaving less unknown physical reality on which human imagination can work. Still, some of the fabulous still remains, at least for some people. The media continue to report sightings of cryptids (e.g., Bigfoot, the Yeti, and the Loch Ness Monster). People still allegedly observe ghosts and similar apparitions in old houses, castles, and elsewhere (James & Thorpe, 1999). Space aliens in unidentified flying objects (UFOs) reportedly appear regularly on deserted country roads. Why?

It is important to include the following caveat in these considerations: It is scientifically possible that some paranormal or other hidden phenomena exist in atypical physical senses. For example, *cryptozoologists,* people who investigate hidden or unknown animals such as Bigfoot and the Loch Ness Monster, frequently refer to the 20th century Western discoveries of the Okapi, a jungle mammal related to the giraffe and initially believed nonexistent, and the coelocanth, a primitive marine fish long thought extinct, as proof that knowledge about the Earth is not complete (Coleman & Clark, 1999). However, some paranormal investigators say the majority of UFO sightings, unknown hominids, ghosts, and other phenomena are the result of errors of observation or interpretation, although many believe that a minority of sightings reflect atypical reality (Coleman & Clark; James & Thorpe, 1999; Mackal, 1976; Wylie, 1980).

We cannot prove that all such observations are erroneous; some may reflect unknown or atypical phenomena, as indicated by the history of science (Lindberg, 1992). However, most evidence suggests that paranormal observations result from erroneous interpretation of known phenomena (James & Thorpe, 1999; Mackal, 1976; Wylie, 1980). Most paranormal observations can probably be explained by psychology. Thus, it is important to understand the psychological dynamics underlying belief systems that may predispose individuals to make erroneous interpretations. In our research, we did not study the possible existence of cryptids or paranormal phenomena. Instead, we focused on the psychological dynamics underlying the relevant belief systems.

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The bulk of erroneous observations of atypical phenomena are psychologically explicable, especially within the realms of psychology dealing with eyewitness identification (James & Thorpe, 1999; Steiger, 1978; U. S. Air Force Air Material Command, 1955; Wylie, 1980). For example, UFO sightings do not typically result from eyewitness observations of a dark sky. There is usually a light, a cloud, or an oddly lit aircraft involved (Steiger). The Loch Ness monster, when allegedly shown in photographs, rarely arises from a lack of visual stimuli on a calm lake; it frequently turns out to be a school of salmon or a flock of ducks (Mackal, 1976). In the majority of cases, something initiates a person's perception of the monster (Mackal). In Bigfoot sightings, which frequently occur in the dark or under other suboptimal viewing conditions (Wylie), the disturbed brush and marks in the ground indicate that the observation is derived from the presence of something. The thing in question is more likely to have been a practical joker, a foraging bear, or an angry cow than an unknown hominid.

Thus, we suggest that the typical erroneous paranormal or cryptozoological observation is an error of interpretation. Such errors are frequently observed in eyewitness observation (Sporer, Malpass, & Koehnken, 1996; National Institute of Justice, 1999) of faces (Shepherd & Ellis, 1996), weapons (Sharps, Barber, Stahl, & Villegas, 2003), vehicles (Villegas, Sharps, Satterthwaite, & Chisholm, 2005), and other forensically relevant items and elements at crime scenes (Narby, Cutler, & Penrod, 1996).

Although a variety of situational and psychophysiological factors interact to reduce the accuracy of memory (Narby et al., 1996), Bartlett (1932) was able to show that memories, in general, reconfigure in the directions of gist, brevity, and personal belief. Criticisms of Bartlett's work (Wheeler & Roediger, 1992) have now been largely reconciled with reference to methodological differences (Bergman & Roediger, 1999), and the trends identified by Bartlett have recently been replicated (Ahlberg & Sharps, 2002; Bergman & Roediger).

A recent theoretical formulation, gestalt/feature-intensive processing theory (G/FI; Sharps, 2003; Sharps & Nunes, 2002) is instrumental in further conceptualizing the dynamics underlying these reconfigurations. According to G/FI theory, under stress or under suboptimal viewing conditions, the feature-intensive processing of the details of a memory or mental representation is diminished, yielding a gestalt representation of an event or of a given class of event that is relatively barren of details. Such details would help to anchor that memory to the physical reality it represents, but, because the details are reduced in number and significance, the resulting gestalt is more amenable to change or to the addition of erroneous details that may arise from postevent information or from characteristics or cognitive frameworks brought by the witness to the situation (Sharps; Sharps & Hess, 2005).

These reconfigurative tendencies are significantly exacerbated by stress and arousal, scene complexity, and surrounding activity (Narby et al., 1996; Sharps, 2003; Villegas et al., 2005). The dynamics underlying the effects of arousal (e.g.,

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on identification accuracy) are still the subject of debate (Burke, Heuer, & Reisberg, 1992; Wells, 1993). However, literature on this subject suggests that factors such as stress, arousal, and high levels of scene complexity and activity result in a greater degree of imaginative reconstruction of events than is likely to occur in their absence. The nonexistent Japanese ships, aircraft, and fleets observed by American soldiers in Hawaii after the attack on Pearl Harbor are examples (Holmes, 1979). In another example, U.S. Army survivors at Little Bighorn immediately after the annihilation of Custer's command saw nonexistent cavalry rescue parties and interpreted Sioux and Cheyenne warriors as American cavalry in several instances (Connell, 1984). A third example is eyewitness reports of a Washington, DC, sniper's white or cream-colored van, when the vehicle was actually a dark blue Chevrolet Caprice (Blades, 2005; Horwitz & Ruane, 2003; Villegas et al.).

In summary, when people are stressed or subject to complex, unfamiliar environments, they are likely to reconfigure objects, people, and events into other objects, people, and events, as shown by Bartlett (1932) and as further elaborated recently in G/FI theory (Sharps, 2003; Sharps et al., 2003; Sharps & Hess, 2005; Sharps & Nunes, 2002; Villegas et al., 2005). However, even under extreme circumstances, not all people perceive objects as other entities. Thus, factors inherent in individual differences must be involved. In the following paragraphs, we suggest possible factors that lead to differential perceptions.

Tendency to exhibit features of attention deficit hyperactivity disorder (ADHD), and especially tendency toward the hyperactive or impulsive pattern shown in specific manifestations of the disorder (Barkley, 1998), may exacerbate tendency to exhibit the type of reconfiguration discussed in the previous paragraphs. The diagnosable syndrome does not need to be present for an individual to show such tendencies. ADHD symptoms tend to be continuously distributed in large populations (i.e., a person can have ADHD tendencies without having diagnosable ADHD; Buitelaar & Van Engeland, 1996), and recent researchers found that such tendencies at a subclinical level can significantly affect behaviors such as substance abuse (Sharps, Price-Sharps, et al., 2005; Sharps, Price-Sharps, Day, Villegas, & Nunes, 2005; Sharps, Villegas, & Matthews, 2005).

Although the potential ramifications have been overblown in the popular media, specific aspects of ADHD, including hyperfocus, tendencies toward rapid task-shifting, and hyperactivity, would probably have been assets, rather than liabilities, in the ancient world of hunting and gathering (Hartmann, 1997). Sharps, Villegas, Nunes, and Barber (2002) found that specific cognitive aspects of the hunting world are still present and experimentally accessible in modern humans. We suggest that in some individuals, adaptations that may have been advantageous when humans were hunter–gatherers are still present and are potentially disadvantageous today. These individuals might be more attracted to a world of unknown animals and unexplored possibilities, in part as a refuge from the mod-

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ern world to which specific aspects of their intellects and psyches are unsuited. We hypothesized that such individuals may be predisposed to beliefs in cryptids because these could represent unknown forms of life. However, we did not expect subclinical ADHD tendencies to be associated with similar beliefs in ghosts, telepathy, or astrology. Because these paranormal beliefs are irrelevant to hunting and related evolutionary processes, we did not expect them to appeal to people with tendencies toward ADHD.

We did not expect to find the same pattern of beliefs in people with symptoms of depression. Unknown animals might not hold special appeal for people with depression, but we hypothesized that potential avenues of escape from perceived difficulties would. Depressed individuals might be more likely to believe in ghosts, for example, because ghosts provide evidence for an afterlife in which present stress would be eliminated. We expected that belief in UFOs would be another avenue of escape for depressed inviduals. Thus, we hypothesized that individuals with subclinical tendencies toward depression would have elevated beliefs in the existence of UFOs and ghosts, but not in cryptids.

We hypothesized that a third psychological condition, dissociation, also influences paranormal beliefs. People in dissociative states feel separated in conscious awareness from ordinarily familiar information or emotional states. "Part of the person … is elsewhere and not available at the present time" (Maxmen & Ward, 1995, p. 310). Even at the subclinical levels addressed in the present article, people with dissociative tendencies feel somewhat removed from the everyday world of human experience. Individuals with dissociative tendencies exhibit diminished critical assessment of reality (Maxmen & Ward) and may have paranormal beliefs at higher levels than do individuals in the general population. However, we did not expect these tendencies to be more prevalent in one area of paranormal phenemona than in others.

Method

Participants

We recruited 56 women (mean age = 20.30 years, *SD* = 3.78) and 31 men (mean age = 20.06 years, *SD* = 1.98) from the psychology department participant pool at California State University, Fresno. All respondents provided informed consent and received debriefing.

Materials and Procedure

All respondents completed a battery of instruments. We measured ADHD tendency with the Conners Adult ADHD Rating Scales (CAARS; Conners et al., 1999). The subscales of the CAARS assess hyperactivity and impulsivity as well as of other aspects of and tendencies toward ADHD. We compared participants'

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scores on the F subscale of the CAARS, which measures the hyperactive or impulsive tendencies that may lead people to reconfigure real-world stimuli into paranormal mental constructs (Hartmann, 1997), with the paranormal and cryptozoological belief measures. We measured depression and depressive tendency with the standard Beck Depression Inventory–II (BDI–II; Beck, 1996) and measured dissociative tendencies with the Dissociative Experiences Scale (DES; Carlson & Putnam, 1986). We assured respondents orally and in writing of the confidentiality and anonymity of their answers.

We constructed a face-valid questionnaire to assess paranormal and cryptozoological beliefs using a 7-point Likert scale. We distrubuted 16 items about these beliefs throughout a 77-question instrument; the other questions involved hobbies, sports interest and participation, literary interests, attitudes on innocuous subjects, and demographic questions unrelated to our investigation. We included these questions to prevent the participants from focusing on paranormal topics. Respondents rated direct statements (e.g., "I think UFOs exist and at least some are alien spacecraft"; "I think the Loch Ness Monster exists"; "I think Bigfoot exists"; "I think some people can foretell the future by mystical or spiritual means"; "I think astrology and horoscopes are useful and often correct") for their accuracy. We do not suggest that this questionnaire is empircally valid or reliable in detecting or evaluating these beliefs among specific populations or for clinical or standardized purposes. To address these concerns would require long-term psychometric evaluation and the use of the entire instrument within a series of appropriate psychometric test frameworks. Our intent was more limited and specific: We evaluated individuals' direct self-reports of paranormal and cryptozoological beliefs against standardized, psychometrically reliable, valid instruments for the measurement of ADHD, depressive symptoms, and dissociation. We designed the items about paranormal and cryptozoological beliefs to provide an accurate, comparative depiction of individuals' beliefs in these areas, and thereby make it possible to test our hypotheses.

We used a series of regression analyses to evaluate the results and removed 5 items from the original 16. We removed two items about Atlantis and the Bermuda Triangle because most of our college-aged respondents were unfamiliar with the ideas, rendering the data from these items uninterpretable. We removed three other items about beliefs about personal experiences with paranormal phenomena because few respondents reported any such experiences. Thus, we used 11 items to assess beliefs in paranormal and cryptozoological phenomena. These items are available by request from the first author. We compared participants' scores on these items with scores on the CAARS, the BDI-II, and the DES. These scores included an overall belief score reflecting the sum of all paranormal and cryptozoological beliefs assessed and four belief type scores reflecting belief in (a) cryptozoological phenomena, (b) UFOs, (c) ghosts, and (d) extrasensory perception and information.

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Results

Table 1 shows descriptive results for all measures, and Table 2 shows results of the regression analyses. Tendencies toward hyperactivity and impulsivity

TABLE 1. Means, Standard Deviations, and Reliability Coefficients (α) for Measures of Hyperactivity, Dissociation, Depression, and Cryptozoological and Paranormal Beliefs

Measure	*M*	*SD*	α
CAARS-F	9.15	4.22	.87
BDI-II	11.27	8.09	.93
DES	14.23	11.34	.95
Cryptozoological and paranormal beliefs questionnaire	8.39	5.91	.90

Note. CAARS-F = F (hyperactivity and impulsivity) subscale of the Conners Adult Attention Deficit Hyperactivity Disorder (ADHD) Rating Scales (C. K. Conners, D. Erhardt, & E. Sparrow, 1999). BDI-II = Beck Depression Inventory-–II (A. T. Beck, 1996). DES = Dissociative Experiences Scale (E. B. Carlson & F. W. Putnam, 1986).

TABLE 2. Results of Statistically Significant Regression Analyses of Measures of Paranormal and Cryptozoological Beliefs, Hyperactivity, Depression, and Dissociation

Variable	Measure	R^2	*F*	*df*	*p*	β
Overall belief score	CAARS-F	.0659	5.86	1, 83	.02	.2568
	BDI-II	.0629	5.64	1, 84	.02	.2508
	DES	.0629	5.64	1, 84	.02	.2508
	CAARS	.0493	4.30	1, 83	.04	.2220
Cryptozoological beliefs	CAARS-F	.0552	5.08	1, 87	.03	.2348
Belief in ghosts	BDI-II	.0585	4.23	1, 87	.02	.2418
Belief in UFOs	Combined	.1507	5.03	3, 85	.003	—
	BDI-II	—	4.73	—	.032	.2535
	CAARS-F	—	4.81	—	.031	.2367

Note. CAARS-F = F (hyperactivity and impulsivity) subscale of the Conners Adult Attention Deficit Hyperactivity Disorder (ADHD) Rating Scales (C. K. Conners, D. Erhardt, & E. Sparrow, 1999). BDI-II = Beck Depression Inventory-–II (A. T. Beck, 1996). DES = Dissociative Experiences Scale (E. B. Carlson & F. W. Putnam, 1986). Combined = combined DES, BDI-II, and CAARS-F.

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(measured by the F scale of the CAARS), depression (measured by the BDI-II), and dissociation (measured by the DES) were significant on the overall belief score, reflecting tendencies toward paranormal beliefs across belief type. We also regressed the overall ADHD score from the CAARS against the overall belief score, and the result was statistically significant ($p = .04$). However, this result must be treated with caution because the F scale of the CAARS is a component of the overall ADHD score, yielding a high degree of collinearity. Overall, these findings supported our hypothesis that, in this population, subclinical tendencies toward ADHD, dissociation, and depression would incline individuals toward beliefs in the paranormal and cryptozoological world.

To evaluate each belief type (i.e., cryptozoological, ESP or astrology, ghosts, UFOs), as measured by its belief type score, against each psychological tendency would have resulted in an experimental error rate of .4596, an unacceptably high level of capitalization on chance. Therefore, we combined CAARS-F, DES, and BDI-II scores in single regression models against each of the belief-type scores. This technique allowed us to evaluate the level of contribution to each psychological tendency toward the beliefs. In addition, we conducted specific tests of effects in isolation to test our other hypotheses.

The overall effect of hyperactive, depressive, and dissociative tendencies on belief in cryptozoological creatures was not significant. However, the effect of the CAARS-F scale measuring hyperactive or impulsive tendencies was significant when tested in isolation. This result is consistent with our hypothesis that the hyperactive and impulsive tendencies characteristic of specific ADHD subtypes, which were potentially adaptive in the ancient hunting and gathering world, would incline individuals toward interest and belief in unknown animals. However, neither depression nor dissociation were associated with cryptozoological beliefs. When we conducted an exploratory analysis substituting the overall CAARS score reflecting overall ADHD tendencies for the F scale, we found no significant relationship. Thus, the hyperactivity component of ADHD, rather than overall subclinical tendencies toward all ADHD-related behaviors, was important for the association with cryptozoological beliefs.

Consistent with our hypotheses, depression, as measured by the BDI-II, was the only psychological tendency that had a significant relationship ($p = .02$) with belief in ghosts. Beliefs in telepathy and astrology were not significantly associated with depression, dissociation, or any facet of ADHD. However, as we predicted, belief in UFOs yielded an overall significant ($p = .003$) regression coefficient against these three psychological characteristics, with both depression and hyperactivity yielding significant associations. Neither dissociation nor the substitution of the overall CAARS score for the F scale score yielded a statistically significant result.

We also evaluated gender differences in belief systems. Consistent with the bulk of the literature (Rudski, 2003), more women than men expressed a belief in ghosts, $F(1, 82) = 7.12$, $p = .009$. However, this gender difference should be

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interpreted with caution because of the difference in number of men (n = 31) and women (n = 56) participating in our study. We expected to find additional differences in belief systems because researchers have reported that men frequently express stronger beliefs in cryptids and UFOs than do women (Rudski). However, there were no other significant differences.

Discussion

The results of this research supported our hypotheses: Depression, dissociation, and the hyperactive or impulsive component of ADHD, as measured in nondiagnosed adults by appropriate standardized instruments, were associated with tendencies toward paranormal beliefs. Also as predicted, different types of paranormal beliefs were associated with different psychological tendencies. Dissociation was associated with enhanced levels of paranormal beliefs overall, but not with any specific type of belief. This result may reflect gestalt tendencies—or tendencies toward the relatively rapid but general appraisal of stimuli, with limited attention to specific features or internal consistencies within those stimuli—that one would expect to find in individuals with dissociative tendencies, even at the subclinical level (Sharps, 2003). Having depressive tendencies was associated with ghost-related ideation, the only belief about the afterlife we examined. Last, both depression and the hyperactive aspect of ADHD were associated with ADHD ideation (respectively, p = .032 and p = .031), and hyperactivity was significantly associated with cryptozoological beliefs (p = .03). However, when we substituted overall ADHD tendencies for the F scale of the CAARS, this relationship was no longer significant. This result indicated that the hyperactive or impulsive component of ADHD behavior predisposes individuals to believe in creatures such as Bigfoot and aliens. The result is consistent with our hypothesis that this ADHD–cryptozoological belief relationship may be related to human adaptations to the requirements of a hunter–gather lifestyle (Hartmann, 1997; Sharps et al., 2002).

Our findings suggest that individuals prone to paranormal and cryptozoological beliefs tend to have systematically identifiable patterns of psychological characteristics (i.e., tendency toward ADHD, depression, and dissociation). These patterns are observable even when the psychological tendencies are present at nondiagnosable (i.e., low) levels, such as in our nonclinical sample of university students.

It is important to note that we would not expect all individuals who express paranormal or cryptozoological beliefs or who are interested in these topics to have tendencies toward ADHD, depression, and dissociation. Individuals could arrive at these beliefs from a variety of directions and perspectives, ranging from familial or environmental influences that spurred the interests to personal experiences with phenomena that were perceived to be paranormal. There are many reasons that people may become interested in atypical phenomena. Despite this

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qualification, these psychological associations did exist in our sample, suggesting that people with these patterns of symptoms may interpret sensory information in paranormal or cryptozoological terms. These interpretive predispositions may then influence the way people remember and report the phenomena (Ahlberg & Sharps, 2002; Bartlett, 1932; Villegas et al., 2005).

Such influences on memory and reporting are of critical significance. Memories are popularly seen as fixed, more similar to a veridical photograph than to a malleable representation (Ahlberg & Sharps, 2002; Sharps, 2003). However, Bartlett (1932) found that memory is subject to significant reconfiguration. The interpretation and conclusions of any memory are subject to the effects of reconfigurations. Many researchers found that the information an individual has prior to an event has powerful biasing effects on memory and interpretation of that event, in realms as disparate as text processing, visual and verbal memory, and interpretation of forensically relevant stimuli and complex crime scenes (Bartlett; Bransford & Johnson, 1973; Sharps et al., 2003; Sharps & Hess, 2005; Sharps & Martin, 2002; Villegas et al., 2005). Thus, it is important to understand the predisposing influences that act upon the belief structures that may predispose an individual to perceive a UFO rather than a cloud, or a Bigfoot rather than a bear running at twilight. These perceptions, transformed by the overall constellation of predisposing influences, become the reconfigured memories that are then interpreted and reinterpreted by the given individual.

We found that systematic, predictable constellations of psychological characteristics accompany predisposing belief systems in a peripheral area of human psychology, the study of the paranormal and the cryptozoological beliefs. Future researchers should look for similar patterns in the less marginal areas of eyewitness identification in crime and the report of significant events in clinical, counseling, and educational applications.

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